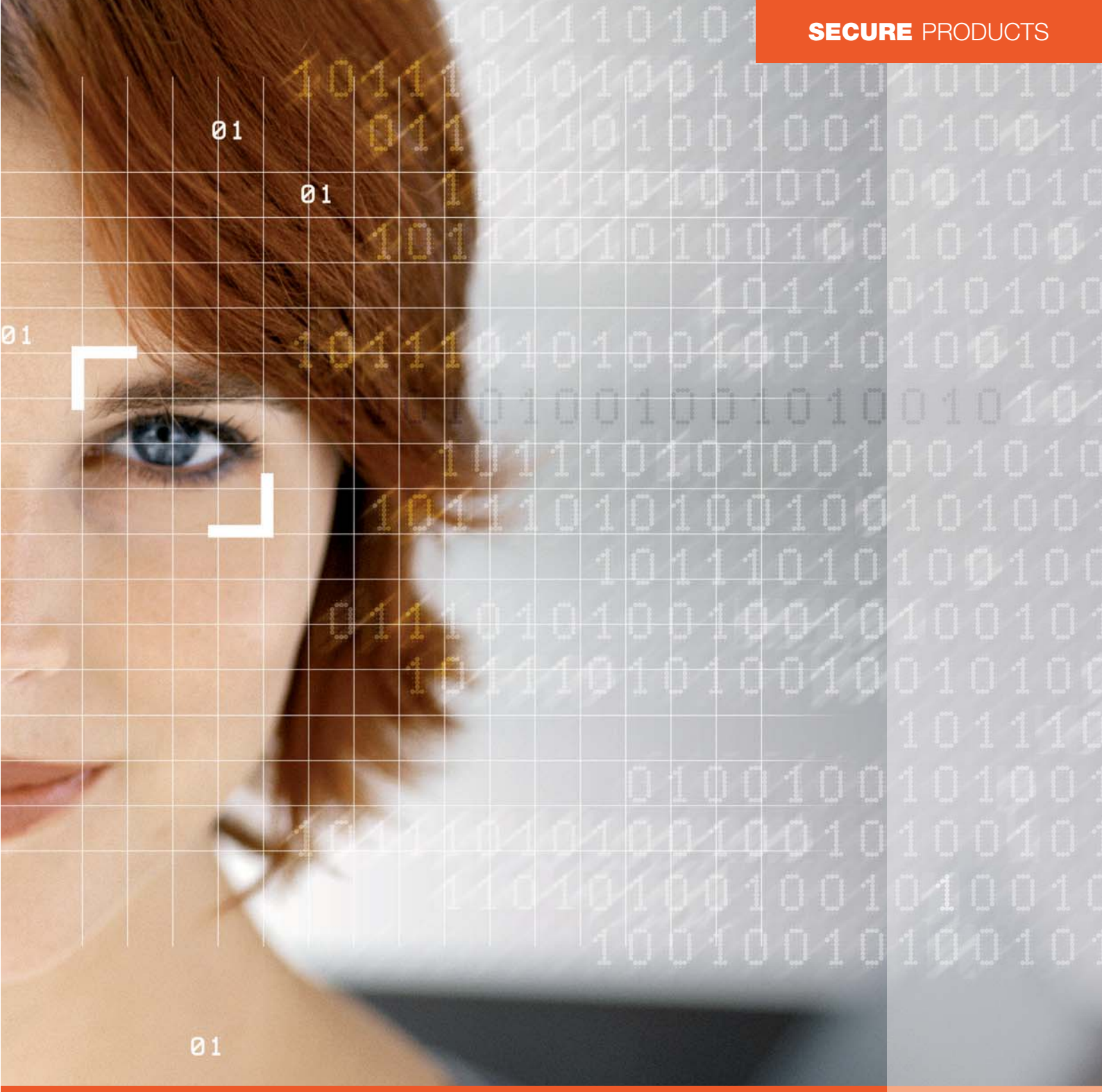


- Microcontrollers
- Security Modules
- Secure System on Chip
- Reader chips
- Trusted Platform Module
- Memories

ATMEL

Worldwide Leadership

For over 25 years, Atmel® has been a leading designer and manufacturer of advanced integrated circuits (ICs) for smart cards and embedded security applications. With a broad portfolio of secure solutions and its long-term commitment to security, Atmel is able to address markets which demand high-level of confidentiality and security.

Product Offering

- Secure Microcontrollers
- Security modules
- Secure System on Chip ICs
- Smart Card reader ICs
- Trusted Platform Modules
- Secure Memories
- Trusted Devices

Applications

- Banking
- Mobile Phones
- Machine-to-Machine
- ePayment
- Pay-TV
- PC Security
- ePassport
- Government ID
- Access Control
- Electronic Transactions Security
- Anti-Cloning Devices
- Transportation

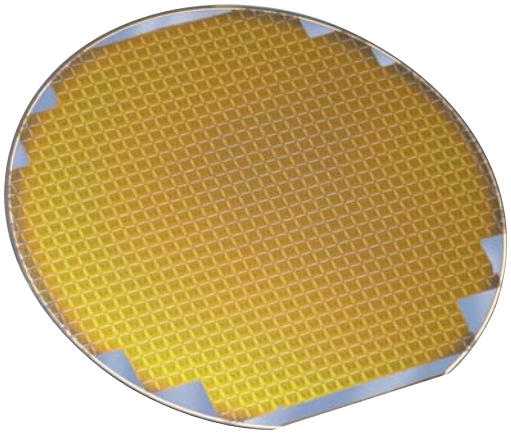
Security

Atmel's products meet the stringent needs of the security market with the highest security certifications for ICs in the industry including Common Criteria EAL4+/EAL5+, FIPS 140-2, ZKA and EMVCo approvals.

Process Technology

Atmel has leading-edge technologies, global manufacturing capacity and world-class design expertise, using the most advanced processes including:

- CMOS with embedded EEPROM and Flash non volatile memories for secure ICs
- Silicon Germanium (SiGe) Bipolar and BiCMOS for high-frequency RF interfaces



R&D Investment

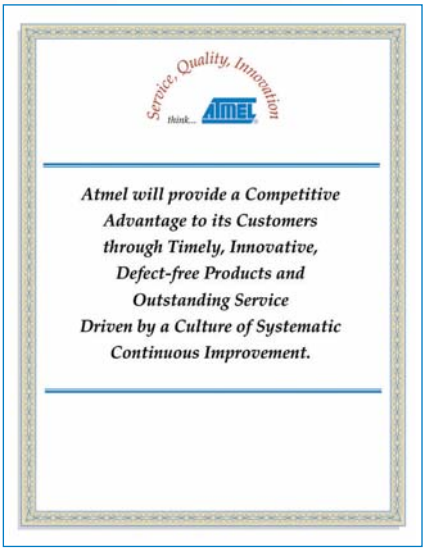
Atmel maintains its competitive edge in process technology evolution and product innovation by means of an on-going program of research and development, undertaken in collaboration with leading industries and key clients.

Facilities

Headquartered in San Jose, California, Atmel operates two fabrication plants in the United States and Europe: Colorado Springs (USA) and Rousset (France). Atmel has opted for fablight strategy with external foundries.

Quality Commitment

Atmel has a corporate-wide commitment to quality that extends to every level of its activities. The objective is continuous improvement and total customer satisfaction. All manufacturing facilities meet international quality standards recognition ISO 9001 and are QML-Q certified. Through its network of R&D, design, manufacturing, sales and distribution facilities in over 60 countries, Atmel is committed to a customer-oriented approach.



8-/16-bit RISC CPU

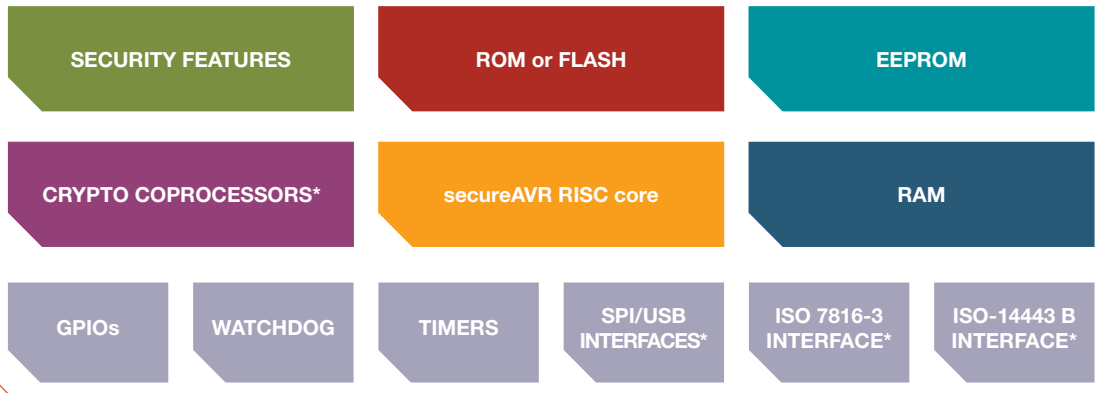
Give your cards the competitive edge with our high-performance secure microcontrollers using Atmel enhanced 8-/16-bit RISC architecture.

secureAVR®

- High-performance 8-/16-bit RISC Core
- Low-power Consumption
- Cost-effective Architecture
- Hardware Optimized for C, Javacard™
- Enhanced Addressing
- Advanced Security
- Internal Clock (up to 30 MHz)
- ISO 7816, USB, SPI
- GPIO

AT90SC offers a complete range of fully compatible products.

AT90SC AVR Architecture



** Product dependent*

AVR® based CPUs

This product range with cost-effective architecture is well-suited for native operating systems and is specifically tailored to target the constraints of low-end GSM SIM card market such as Phase 2, Phase 2+ and SIM tool kit.

secureAVR® based CPUs

Suited to mass-volume market, secureAVR products offer advanced security features, higher performance (advanced EEPROM, clock speed, access time…) and larger memories for high-end mobile solutions, running on open platforms OS e.g JavaCard™. The enhanced secureAVR platform offers additional security for the most stringent application needs.

Enhanced secureAVR based CPUs with PKI

Secure your banking, pay-TV and e-ID applications with Atmel's fast cryptocontrollers. Our AdvX™ crypto-accelerator offers the performance and security level you need for all your DDA (Dynamic Data Authentication) and PKI requirements. Software developers can either select ciphering functions from our complete and certified library, or alternatively build their own implementation.

Encryption/Decryption, Digital signature, Data integrity verification, Key generation, Secure key storage

- Advanced multiplier architecture supports Zp and GF (2^n) arithmetics
- High performance, low power
- Up to 2624-bit key length RSA®, 3520-bit with CRT
- ECC over Zp (all P-xxx FIPS 186-2 curves)
- High-performance crypto-library (toolbox)
- Side channel resistant
- Optional customer crypto development capability
- Compliant with contactless applications

secureAVR based CPUs with Contactless Interface

Want to go contactless? With a portofolio of products from 4 Kbytes up to 144 Kbytes of EEPROM, Atmel's contactless and dual interface secure microcontrollers are specifically tailored to serve e-Government, Transportation and Banking applications.

Atmel's products bring significant value to the e-ID market by improving the speed during the control of personal identity and protecting the privacy of e-ID holders. They are designed to meet the Common Criteria EAL5+ security level.

Applications

- ID
- e-Passport
- Driving-License
- Transit Ticketing
- e-Ticketing and e-Purse
- Proximity Payment
- Access Control

Security through Experience

Atmel has more than 25 years expertise in secure microcontroller designs for smart cards with some of the highest certifications for ICs in the industry including:

- Common Criteria EAL4+/EAL5+
- EMVCo
- FIPS 140-2, level 3 and 4
- ZKA
- JCB

Common Criteria EAL4+ Certified

Common Criteria EAL5+ Certified

AT90SC Product Guide

Part Number Identification

AT90SC XXX YYY R C F T U

AT: Atmel
90: AVR core
SC: Smart Cards

XXX: ROM or Flash
YYY: EEPROM

R: ROM program memory
C: Crypto-engine
F: RF interface

T: 0.18 µm
U: 0.15 µm

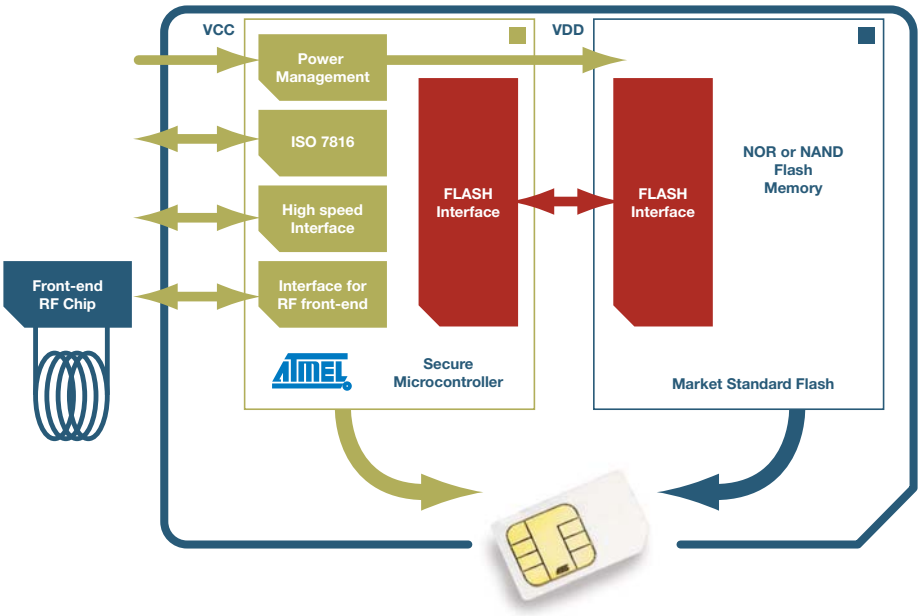
Part Number	EEPROM	ROM	Flash	RAM	Voltage	T-DES
AVR-based						
AT90SC6418RU	18K	64K	N/A	2K	2.7 - 5.5V	No
AT90SC12036RU	36K	120K	N/A	3K	2.7 - 5.5V	No
secureAVR-based						
AT90SC9604RU	4K	96K	N/A	2K	2.7 - 5.5V	Yes
AT90SC9608RT	8K	96K	N/A	4K	2.7 - 5.5V	Yes
AT90SC9618RT	18K	96K	N/A	4K	2.7 - 5.5V	Yes
AT90SC16018RU	18K	160K	N/A	4K	2.7 - 5.5V	Yes
AT90SC19236RU	36K	192K	N/A	4K	1.62 - 5.5V	Yes
AT90SC3636U	36K	N/A	36K	6K	1.62 - 5.5V	Yes
AT90SC25672RU	72K	256K	N/A	6K	1.62 - 5.5V	Yes
AT90SC128112RU	112K	128K	N/A	4K	1.62 - 5.5V	No
AT90SC288144RU	144K	288K	N/A	6K	1.62 - 5.5V	Yes
secureAVR-based with PKI						
AT90SC13612RCU	12K	136K	N/A	4.5K	2.7 - 5.5V	Yes
AT90SC1818CT	18K	N/A	18K	5K	2.7 - 5.5V	Yes
AT90SC9618RCT	18K	96K	N/A	4K	2.7 - 5.5V	Yes
AT90SC20818RCU	18K	208K	N/A	4.5K	2.7 - 5.5V	Yes
AT90SC3636CT-USB	36K	N/A	36K	8K	1.62 - 5.5V	Yes
AT90SC12836RCT	36K	128K	N/A	5K	2.7 - 5.5V	Yes
AT90SC24036RCU	36K	240K	N/A	6K	2.7 - 5.5V	Yes
AT90SC25672RCT	72K	256K	N/A	8K	1.62 - 5.5V	Yes
AT90SC25672RCT-USB	72K	256K	N/A	8K	1.62 - 5.5V	Yes
AT90SC28848RCU	48K	288K	N/A	8K	2.7 - 5.5V	Yes
AT90SC28872RCU	72K	288K	N/A	8K	2.7 - 5.5V	Yes
AT90SC144144CT	144K	N/A	144K	8K	1.62 - 5.5V	Yes
AT90SC320288RCT	288K	320K	N/A	8K	1.62 - 5.5V	Yes
secureAVR-based, contactless						
AT90SC6404RFT	4K	64K	N/A	1.2K	N/A	Yes
AT90SC6408RFT	8K	64K	N/A	1.2K	2.7 -5.5V	Yes
AT90SC12872RCFT	72K	128K	N/A	5.2K	2.7 -5.5V	Yes
AT90SC256144RCFT	144K	256K	N/A	8.2K	2.7 -5.5V	Yes

(1) Full Contactless

32-bit RISC CPU

Get rid of usual smart cards constraints with the new generation of secure microcontrollers based on ARM® SecurCore™ for advanced applications. The AT91SC is a low-power, high-performance, 32-bit RISC microcontroller with ROM program memory, advanced EEPROM data memory and cryptographic accelerator. This product family targets applications requiring high computing power, very large memories and high-speed protocols.

A Two-Chip Solution Within a Single Module



Advanced Features

- USB 2.0 Full Speed and inter-chip USB to allow very high speed transactions with USB host terminal
- Dedicated interface for NAND or NOR flash memories
- Link to RF front-end device through a Single Wire Protocol
- Hardware accelerator for Java Card Byte Code

Part Number	EEPROM	ROM/FLASH	RAM	Voltage	PKI	RF Interface	External Flash
AT91SC512384RCT	384K	512K	24K	1.62-5.5V	Yes	SWP/USB	N/A
AT91SC512384-8M	384K	512K	24K	1.62-5.5V	Yes	SWP/USB	8MB
AT91SC512384-128M	384K	512K	24K	1.62-5.5V	Yes	SWP/USB	128MB
AT91SC192192CT-USB	192K	192K	24K	1.62-5.5V	Yes	SWP/USB	N/A
AT91SC464384RCU	384K	464K	18K	1.62-5.5V	Yes	SWP	N/A

(U)SIM Solutions for M2M

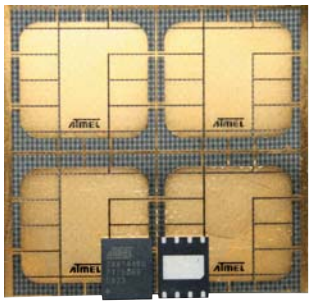
Atmel has developed new secure microcontrollers for cellular Machine-to-Machine communication modules. By using GSM and UMTS networks, these modules provide wireless connectivity to a range of equipments that communicate without human intervention. Network communication can be granted by the (U)SIM tailored to withstand extreme environmental conditions. Extended guarantees and new packaging are the key benefits of using Atmel secureAVR® 8-/16-bit microcontroller solutions.

Applications

- Tracking and Inventory Management
- Telemetry
- Payment and Transaction
- Monitoring and Alerting
- Home Security
- Fixed Wireless Terminals
- Remote Control

Key Features

- 8-/16-bit RISC secureAVR core
- Extended Temperature Range [-40°C ;105°C]
- 10 years data retention over full temperature range
- Tiny DFN8 package solution



Part Number	EEPROM	ROM	RAM	Voltage	Package
AT90M19236RU	36K	192K	4K	1.62-5.5V	DFN8, QFN44
AT90M25672RU	72K	256K	6K	1.62-5.5V	DFN8, QFN44
AT90M288144RU	144K	288K	6K	1.62-5.5V	DFN8, QFN44

Secure System On Chip ICs

Atmel has developed a new generation of secure microcontrollers for trusted electronic devices (Transaction Terminals, EFT/POS, PINPads, Health Card Readers, Home Banking, Access Control, Transportation).

Innovative System-on-Chip

- 32-bit RISC ARM® SecurCore™
- 256 Kbytes of EEPROM
- 100 Kbytes of RAM
- Secured external bus interface
- USB, SPI, USARTs, I/Os, smart card and magnetic stripe card interfaces

Compliant with EMV Standard and PCI PED

The AT91SO family hosts strong security mechanisms, including intrusion sensors, dedicated hardware protections, real time clock and battery backup. It also has an impressive set of cryptography features, hardware DES, TDES, AES and SHA-n, crypto-graphic accelerator for asymmetric algorithms (RSA, elliptic curves, key generation) and a true random number generator. This secure chip runs an RSA 2048-bit decryption in less than 150 ms. It is Common Criteria EAL4+ certified .

Embedded Software

- Crypto-library
- EMV level 1
- Secure bootloader
- Drivers and communication stack (USB CCID, CDC, RNDIS...)

Part Number	EEPROM	ROM	RAM	PKI	Voltage	ADC	SCI Analog DC/DC	SPI High Speed	Package
AT91SO111*	256K	32K	100K	Yes	2.7-3.3V	Yes	Yes	Yes	BGA 256
AT91SO110	256K	32K	100K	Yes	2.7-3.3V	Yes	No	Yes	BGA 256
AT91SO101*	256K	32K	100K	Yes	2.7-3.3V	No	Yes	No	BGA 256
AT91SO100	256K	32K	100K	Yes	2.7-3.3V	No	No	No	BGA 256
AT91SO51*	256K	32K	100K	Yes	2.7-3.3V	No	Yes	No	BGA208
AT91SO50	256K	32K	100K	Yes	2.7-3.3V	No	No	No	BGA208
AT91SO25	256K	32K	100K	Yes	2.7-3.3V	No	No	No	BGA144

Reader Chips

Working with industry leaders such as Gemalto® and Omnikey®, Atmel provides a large portfolio of products to address various security applications: PC link readers, smartcard keyboards, point of sales terminals and set top boxes.

	AT89C5121	AT83C5121	AT83C21GC	AT83R5122	AT89C5122	AT83C22OK	AT83C5123	AT83C23OK	AT83C5127	AT83C25OK	AT90SCR100	AT83C26
	Serial Interface			USB Interface						PCMCIA	Serial and USB Interface	Level Shifter
Microcontroller												
Flash (KB)	16				32	32					64	
ROM (KB)		16		32			30		16			
Core	C51	C51	C51	C51	C51	C51	C51	C51	C51	C51	AVR	
Firmware			Gemalto			Omnikey		Omnikey		Omnikey		
Core Frequency	16MHz	16MHz	16MHz	48MHz	48MHz	48MHz	48MHz	48MHz	48MHz	48MHz	48MHz	
Serial Interface												
USB Device Endpoints				7	7	7	5	5	5		8	
USB Host Endpoints											4	
UART	1	1	1	1	1	1	1	1	1		1	
SPI				1	1	1					1	
High Speed SPI											1	
Analog Interface	1	1	1	1	1	1	1	1	1	1	1	2+3SAM
Card Interface												
Digital Interface	1	1	1	1	1	1	1	1	1	1	1	
Alternate Card	✓	✓		✓	✓		✓		✓			
Synchronous Card	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
USB Card											✓	
ESD Protection	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	
DC/DC Converter												
3V & 5V Modes	60mA	60mA	60mA	60mA	60mA	60mA	60mA	60mA	60mA	60mA	60mA	60mA
1,8V Mode	35mA	35mA	35mA	35mA	35mA	35mA	35mA	35mA	35mA	35mA	35mA	35mA
Voltage Supervisor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Other Features												
I/O Ports (LED)	14(2)	14(2)	14(2)	46(7)	46(7)	(2)	13/17(4)	(2)	13/17(4)		38(4)*	
Power Supply (V)	2.85-5.5	2.85-5.5	2.85-5.5	3.0-5.5	3.0-5.5	3.0-5.5	3.0-5.5	3.0-5.5	3.0-5.5	3.0-5.5	2.7-5.5	3.0-5.5
Crypto Engine											AES/RNG	
Packages	SSOP24	SSOP24	SSOP24	QFP64 QFN64	QFP64 QFN64	QFP64 QFN64	QFP32 QFN32	QFP32 QFN32	QFP32 QFN32	QFP64 QFN64	QFP64 QFN64 QFN32	QFP48 QFN48

*Available in QFP64 and QFN64 packages.

ISO 7816 Interface

- Card Clock up to 8 MHz
- Easy and Fast Data Transfer
- Up to 420 Kbps

Integrated DC/DC

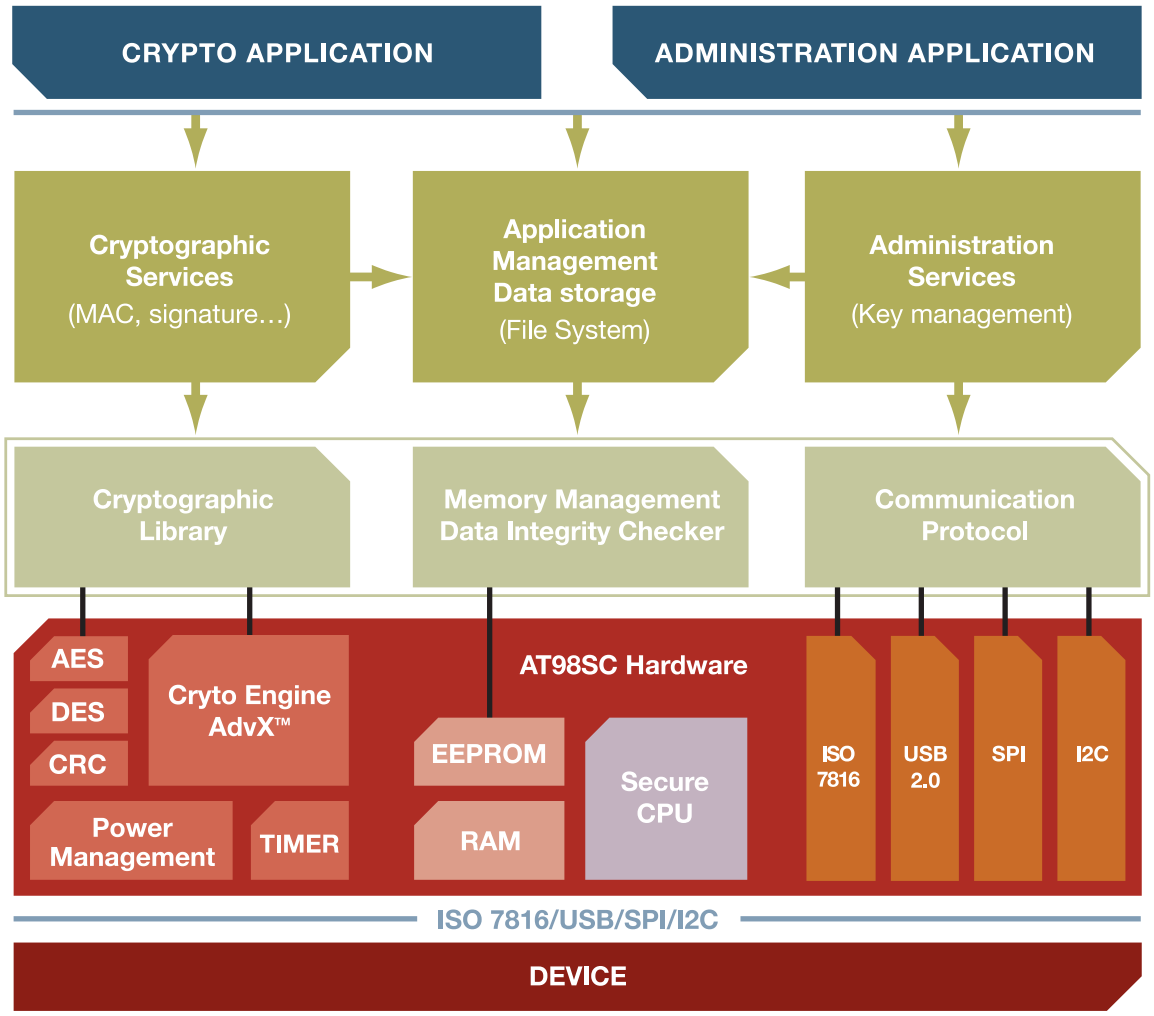
- High Efficiency: 80 to 98%
- Drives 5V, 3V, 1.8V Cards
- Card Power Supervisor

Reference Designs and Tools

On top of our standard development tools, two reference design kits developed in partnership with Omnikey and Gemalto are available to enable the easy implementation of pre-certified and ready-to-use solutions: AT89RFD-02 (USB interface) AT89RFD-05 (Serial interface), and AT89RFD-06 (PCMCIA).

Security Modules

Protect your applications against high-tech goods counterfeiting, multimedia contents copying and identity theft with our AT98SC family of security modules. Based on Atmel smart card chip design expertise, the AT98SC is a complete turnkey and easy to use solution (hardware and firmware) designed to secure Embedded Systems.



Hardware Platform

secureAVR®

- SecureAVR Architecture
- High Level Cryptographic Services Based on Hardware Accelerators
- USB 2.0 Full Speed Interface, USB CCID Compliant
- SPI, ISO 7816, I2C Interfaces
- Designed to meet C.C. EAL4+ and FIPS 140-2 certifications

Advanced Cryptographic Features

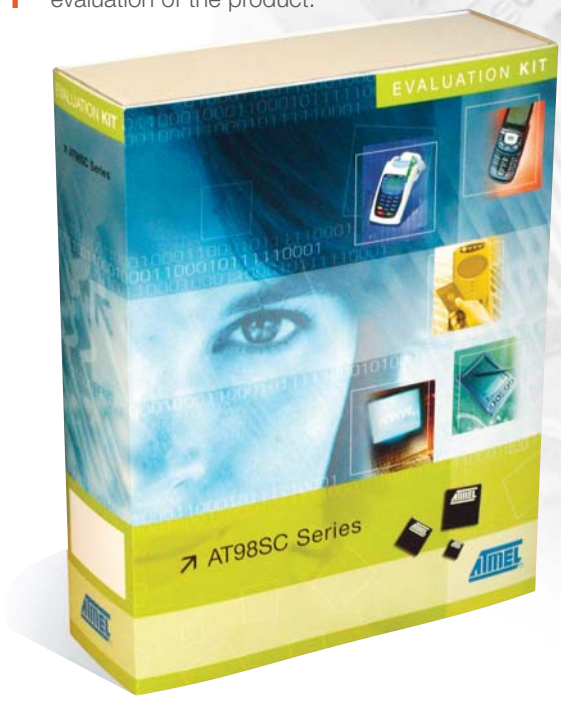
- Strong challenge-response authentication
- Digital signature (RSA PKCS#1 v2.1, DSA, ECDSA)
- Data encryption (AES, 3DES, RSA PKCS#1 v2.1)
- Message digest (SHA1, SHA256)
- Public Key generation (RSA 4096, DSA, ECC)
- HOTP one time password
- MAC (AES, 3DES, HMAC)

The AT98SC family is ideally suited to secure set top boxes, vending machines, media centers, gaming platforms and e-tokens.

Part Number	EEPROM	I/O Interface	Voltage	Package
AT98SC004U	4K	SPI, I2C, ISO 7816	2.7V-5.5V	SOIC-8, DFN8
AT98SC016CU	16K	SPI, I2C, ISO 7816	1.62V-5.5V	QFN20, SOIC-8
AT98BSC032CT-USB	32K	USB 2.0, ISO 7816	2.7V-5.5V	QFN44, SOIC-8
AT98SC064CT-USB	64K	USB 2.0, ISO 7816	2.7V-5.5V	QFN44, SOIC-8
AT98SC-STK01xxxx	Development Kits			

Development Kit

The AT98SC evaluation kit provides a user-friendly hardware and software package that allows the evaluation of the product.



Hardware

- A Set of product samples
- An Evaluation board
- USB to SPI / I2C / ISO 7816 adapter
- A USB dongle

Software

- A getting started document
- AT98 Manager to personalize the AT98SC File System
- The official demonstration application to get an insight of AT98SC features
- Many advanced tutorial scripts to ease the understanding of AT98SC
- High Level Cryptographic Libraries for easy System Integration

Development Tools for AT90SC and AT91SC

The Atmel smart card development kit is a user-friendly hardware and software package that allows easy development, simulation and code emulation of AT90SC and AT91SC family products. The kit includes a complete set of tools for tuning and speeding-up your application development.

secureAVR®

ARM® POWERED

Key Hardware Tools

- Voyager™ emulation platform ATV™4 including contactless features and ATV4P
- Eagle 3-in-1 board: reader / spy / simulator
- USB development board
- AT91SC Evaluation Board

Key Software Tools

- IAR systems Embedded Workbench® development environment (compiler, assembler, linker, debugger)
- ARM developer suite™
- RealView® MDK-ARM
- Smart access command script editor
- Embedded libraries
  - Easy start hardware abstract libraries (HAL)
  - Advanced first software layers (FSL)
  - Crypto toolbox

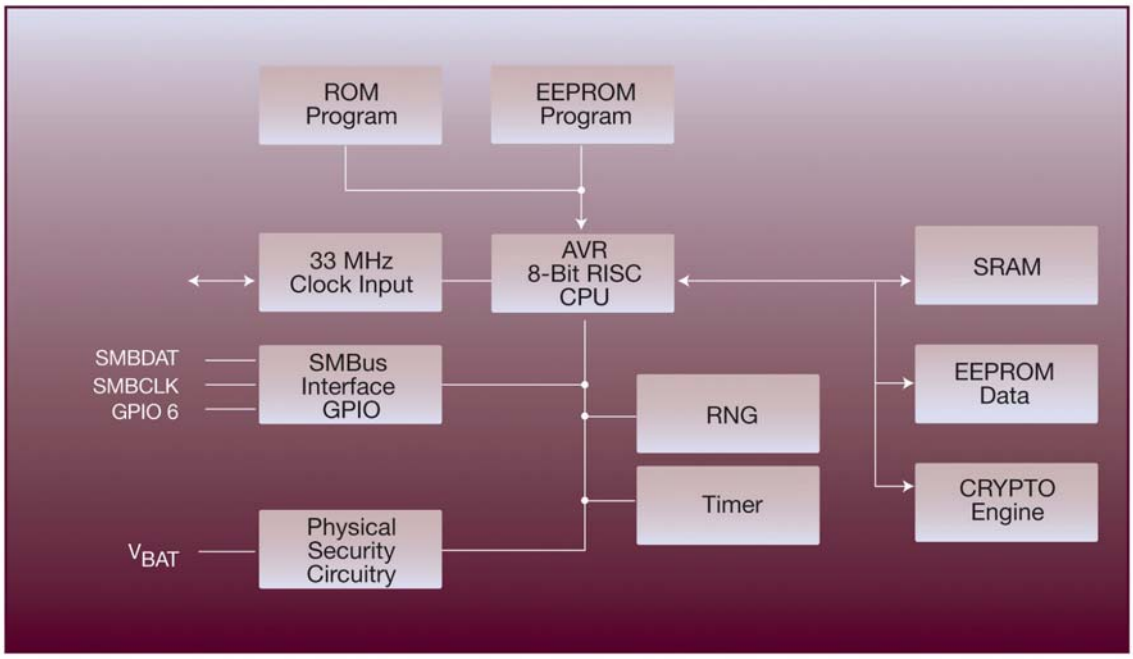
IAR SYSTEMS

Trusted Platform Module

For the ultimate in hardware-based data security, count on Atmel's Trusted Platform Module (TPM), a complete turnkey solution providing ultra-strong security for computing systems. Primary TPM capabilities:

- IP protection
- System integrity
- Authentication
- Secure communication

The core building blocks for the Atmel TPM are our popular AVR microcontroller and our expertise in silicon security technologies. Additional security measures include active shielding and a variety of tamper-evident circuits. Available in a 28-lead TSSOP and a space-saving 40-lead QFN package, Atmel's TPM provides a cost-effective solution for all computing devices.



- Full Trusted Computing Group (TCG) v1.2 rev 103 Specification Compatibility
- 2048-bit Hardware RSA Crypto Accelerator
- Hardware SHA-1 Accelerator, 50 µs / 64-byte Block
- On-chip Storage of up to 21 User Keys
- Reliable EEPROM for Nonvolatile Storage, No Batteries Required
- True Hardware Random Number Generator
- 3.3V Operation +/- 10% Supply Voltage
- 28-lead TSSOP and 40-lead QFN Package Options

TPM Platform Module

The Atmel TPM implements the full specification developed by the Trusted Computing Group that is increasingly being adopted as the industry standard for secure remote communication between all types of electronic devices. Because Atmel provides embedded firmware, no customer-developed firmware is required.

A TCG Software Stack (TSS), BIOS (both MAD & MPD), WHQL certified drivers for Microsoft® Windows® operating systems, Linux® drivers, and applications all ensure effortless integration of the most advanced and affordable security technology available today.

Embedded Development Kit

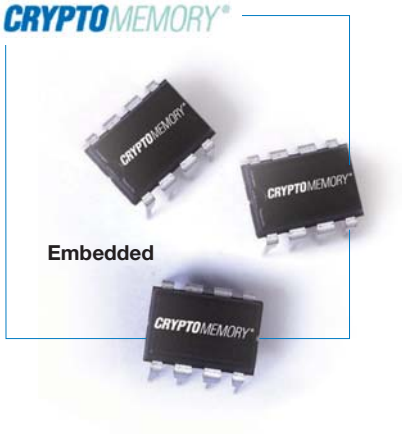
CryptoController development kit is based on the AVR AT90USBKey kit with an added Embedded TPM SMBus module and Embedded TPM SMB demonstration and evaluation software.
Start sending commands to TPM immediately.

The kit includes:

- TPM SMBus module
- Mounted on AT90USBKey board
- Standard A to mini B USB device cable
- Mini A to receptacle A USB host adapter
- USB flash drive
- Alternate 9V battery supply cable
- Flash drive with sample code and all necessary documentation

Part Number	Description	I/O Interface
AT97SC3203	Fully V1.2 TCG-compliant Security Processor, Microsoft® Windows Vista™ Logo Compliant, Secure Key Generation and Storage (15 to 21 RSA® Keys, depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 500 ms	LPC
AT97SC3203S	Fully V1.2 TCG-compliant Security Processor, Optimized for Embedded Systems, Secure Key Generation and Storage (15 to 21 RSA Keys, Depending on Key Mix and Size), RNG, SHA-1, 2048/RSA Sign-in 500 ms	SMBus™

CryptoMemory®



The Worlds Only Secure Serial EEPROM

This embedded family of devices in the plastic package option provides secure serial EEPROM storage for sensitive information within an embedded system. CryptoMemory cryptographic security IC's offer a low cost, high security solution for any embedded application requiring data protection and using only synchronous protocol.

A cryptographic algorithm encrypts data and passwords as well as generate Message Authentication Codes (MAC) thereby providing a secure place where information remains safe even under attack. CryptoMemory is the only secure memory family of devices in the industry with mutual authentication between device and host, plus data encryption. Both synchronous and asynchronous protocols are available.

CryptoMemory Advantages

- No Operating System Needed; Easy to Program
- More Flexible and Secure than Small Microprocessor (<16 Kbytes ROM)
- Cost Savings up to 50% Compared to Microprocessor Implementation
- Fast Time to Market
- Can be used in both embedded and smart card applications

Development Kits

- Aris Adaptor Development Kit, AT88SC-DK1
- Aris + Development Kit, AT88SC-ADK2
- Aris ++ Development Kit, AT88SC-ADK1
- Tuema Development Kit, AT88SC-SDK1

Device	User Memory	Memory Zones	Passwords	Authentication	Encryption	Interface Type	VCC
AT88SC0104C	1 Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC0204C	2 Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC0404C	4 Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC0808C	8 Kbit	8	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC1616C	16 Kbit	16	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC3216C	32 Kbit	16	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC6416C	64 Kbit	16	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC12816C	128 Kbit	16	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC25616C	256 Kbit	16	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-5.5
AT88SC0104CA	1Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-3.3
AT88SC0204CA	2Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-3.3
AT88SC0404CA	4Kbit	4	Yes	Yes	Yes	ISO7816 + 2-wire	2.7-3.3
AT88SC0808CA	8Kbit	8	Yes	Yes	Yes	ISO7816 + 2-Wire	2.7-3.3

CryptoRF®

CryptoRF supports the most stringent security standards used for track and trace, logistics management, anti-cloning and anti-counterfeiting, identification, and e-purse.
The CryptoRF® family of devices for contactless tags, smart cards, and label applications are available with memory densities from 1 Kbit to 64 Kbits.

Atmel offers the industry's largest range of devices based on our proven secure technology.

World's Largest Family of Secure RF Memories

- 64-bit Mutual Authentication Protocol
- Stream Encryption Ensuring Data Privacy
- Multiple Key Sets for Authentication and Encryption
- Cryptographic Message Authentication Codes (MAC)
- Encrypted Passwords with Attempt Counters
- Selectable Access Rights by Zone
- Tamper Sensors
- Compliant with Industry Standards

Device	User Memory	Memory Zones	Passwords	Authentication	Encryption	Interface Type
AT88SC0104CRF	1 kbit	4	Yes	Yes	Yes	ISO14443 Type B
AT88SC0204CRF	2 kbit	4	Yes	Yes	Yes	ISO14443 Type B
AT88SC0404CRF	4 kbit	4	Yes	Yes	Yes	ISO14443 Type B
AT88SC0808CRF	8 kbit	8	Yes	Yes	Yes	ISO14443 Type B
AT88SC1616CRF	16 kbit	16	Yes	Yes	Yes	ISO14443 Type B
AT88SC3216CRF	32 kbit	16	Yes	Yes	Yes	ISO14443 Type B
AT88SC6416CRF	64 kbit	16	Yes	Yes	Yes	ISO14443 Type B

Applications

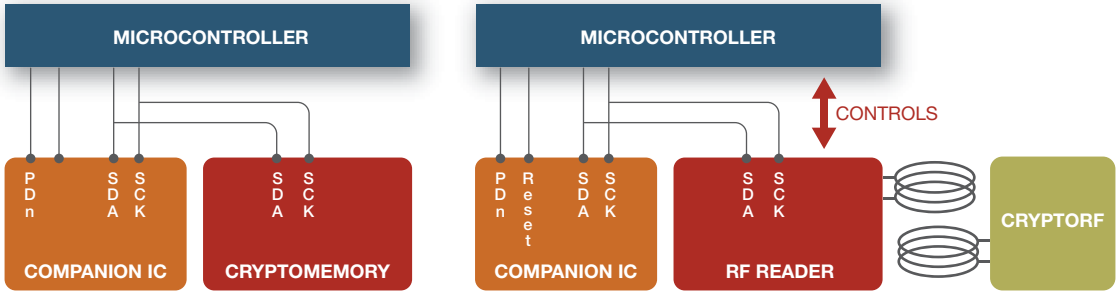
- Secure Track and Trace
- Anti-Counterfeiting
- Logistics Management
- Tags
- Industrial RFID
- Identification Cards
- E-Purse
- Labels

Development Kits

- Yuma + Development Kit, AT88SCRF-ADK1
- Keen + Development Kit, AT88SCRF-ADK2
- CryptoRF/Skytek Development Kit, AT88SCRF-S7DK2p

CryptoCompanion™

CryptoCompanion eliminates the need to implement the CryptoMemory or CryptoRF host side algorithm in software. Using the standard SHA-1 algorithm, the device provides secure key storage and management of up to 16 keys. CryptoCompanion simplifies and secures deployment of CryptoMemory or CryptoRF by avoiding algorithm and key disclosure from reverse-compilation of system operating code. In addition, CryptoCompanion incorporates a robust random number generator usable for the entire system security.



Device	Memory	Authentication	Encryption	Interface Type	VCC	Package
AT88SC016	4 Kbit	Yes	Yes	2-wire	2.7-5.5	8-SOIC

13.56 MHz Reader IC

Atmel's AT88RF1354 reader IC communicates with RFID transponders using the ISO 14443-B communication interface standard. The device is compatible with 3.3V and 5V host microcontrollers with two-wire or SPI serial interfaces. The AT88RF1354 performs all of the RF encoding, timing, and protocol functions, greatly reducing the burden on the host microcontroller.

Device	Interface Type	VCC	Package
AT88RF1354	SPI + 2-wire	2.7-5.5	36-pin QFN

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